

Application No. 09/641,654

Docket No. 35-0017

REMARKS

Claims 1-24 were originally submitted for examination and claims 25-38 were added by preliminary amendment. In the aforementioned Office action, various subgroups of claims 1-38 were rejected either as anticipated by Hershey et al. (Pat. No. 5,878,034), or as obvious in view of various combinations of cited patents. By this amendment, Applicant respectfully traverses the rejections but has amended many of the claims for clarity and in an effort to distinguish the invention more clearly over the cited art. Claim 23 has been cancelled, leaving claims 1-22 and 24-38, which are submitted for reconsideration and reexamination in light of the following remarks.

Rejections under 35 U.S.C. §102:

In section 3 of the action, claims 1, 3-5, 8, 9, 14, 16-18 and 23 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Hershey et al. (Pat. No. 5,878,034). Hershey discloses a satellite communication system in which uplink transmissions from multiple ground stations are synchronized to arrive at a satellite in desired time slots of a TDMA (time division multiple access) scheme. Because the ground stations are in general at different distances from the satellite, and the satellite is moving with respect to the ground stations, this TDMA synchronization is achieved by means of ranging signals transmitted from at least some of the ground stations. By measuring the roundtrip signal propagation time from each ground station to the satellite, a measure of the satellite's constantly changing position is obtained in a master ground station, and this is used to time the data transmissions from each of the ground stations. Hershey's selected ground stations transmit these ranging signals using a spread spectrum technique that utilizes the entire available bandwidth of the

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satellite, without significantly affecting data transmission in multiple narrowband channels. Spread spectrum transmission is inherently broadband or "wide band" transmission.

The Examiner characterizes Hershey as disclosing all the elements of claim 1. In particular, the Examiner equates the "wide band network" of claim 1 with the spread spectrum transmission of ranging signals used by Hershey. The distinctions between these two applications of broadband communication are readily apparent. First, Hershey uses spread spectrum techniques and code-division multiple access (CDMA) to associate transmitted ranging signals with separate ground stations. The ranging information obtained from these signals is then used to control the timing of data transmissions on narrowband channels, as illustrated in FIGS. 4b and 4c. By way of contrast, the present invention uses a terrestrial wide band communications network to carry data efficiently from ground stations to a processing center. Both use broadband communication, but in totally different contexts and applications. To distinguish the invention more clearly from Hershey in this regard, the wide band network is now specified as being "terrestrial," which the Hershey ranging technique is certainly not.

The Examiner further characterizes Hershey as disclosing an "earth processing center," which is said to be the same as a ground station. However, none of the ground stations in Hershey can be convincingly characterized as performing the function of the earth processing center of the present invention. Hershey's ground stations transmit and receive data over narrowband satellite channels. Some of them also transmit and receive ranging signals in spread spectrum CDMA format, and one of those is denoted a "master" ground station because it processes the ranging data and generates satellite

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position information for the other ground stations. There is not, however, any ground station that could be fairly characterized as performing the function of the earth processing center. The Hershey ground stations are described as having external connections for transmitting and receiving data, but beyond that there is no description of how received data might be processed. Accordingly, it is Applicant's position that Hershey does not show or suggest the function of the earth processing center of the present invention.

The Examiner further characterizes Hershey as disclosing "a first (and a second) receptor terminal arranged to receive the first (and second) data from the satellite and to place the first (and second) data on the network for transmission to the processing center (i.e., reads on ground station transmitting using wideband coded ranging signals)." As noted above, the ranging signals of Hershey are separately transmitted in spread spectrum CDMA format, to determine satellite range and position data. These ranging signals have nothing to do with the data received by ground stations and, contrary to the Examiner's assertion, there is no connection between the data received at a ground station and signals transmitted for ranging purposes. In fact, some of the ground stations in Hershey do not transmit ranging signals at all, e.g., ground station 36. In the present invention, received data signals are transmitted over a wide band terrestrial network to the earth processing station, and there is no disclosure or suggestion of this function in Hershey.

Claims 3 and 4 are believed to be allowable with claim 1, from which they depend. They are also believed to be allowable for the additional reason that the argument for their rejection assumes that the first and second data are received from

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ground stations. Claim 1 recites that first and second data are received from "first and second sources" and separately recites that the apparatus of the invention comprises a "first receptor terminal" and a "second receptor terminal." The receptor terminals receive data from the satellite but do not transmit data to the satellite. Therefore, the Examiner's comments accompanying the rejections of claims 3 and 4, equating "receptor terminals" with "ground stations," do not support the rejections.

Claim 5 recites that the satellite transits the first data to the first receptor terminal and the second data to the second receptor terminal in the event that the receptor terminals are prepared to receive the respective data transmissions. The Examiner cites text (in columns 2 and 3) that describes the transmission and reception of the ranging signals of Hershey. Applicant again respectfully points out that the ranging signals of Hershey have nothing to do with the transmission of data from the satellite to ground. To further distinguish the invention from Hershey, the word "prepared" has been changed to "prepared and positioned." In the context of the present invention, data are transmitted by the satellite on an almost continuous basis. Claim 5 defines a situation where first data is received by a first receptor terminal and second data is received by a second receptor terminal. Hershey is not concerned with such a situation and does not disclose or suggest the invention of claim 5, which should in any event be allowable with independent claim 1.

As to claim 8, the Examiner asserts that Hershey discloses a satellite that "inherently comprises a sensor arranged to receive the first data and the second data." In support of this assertion, the Examiner relies on column 2, lines 41-51, which describes the basic method of synchronization of TDMA transmissions from the ground

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stations, including the transmission and reception of ranging signals. Once again, the Examiner has confused the transmission of data with the transmission of ranging signals. Hershey discloses no onboard sensors for receiving data, except to the extent that it must include one or more antennas for receiving signals from ground stations. In this sense, the Hershey satellite includes a "sensor," but only for the purpose of receiving signals from ground stations. The first and second data recited in claim is said to be received from a first source and a second source that are separately defined, i.e., not receptor terminals. Therefore, Applicant respectfully argues that the subject matter of claim 8 is not disclosed or suggested by Hershey and should, in any event be allowable with claim 1.

As to claim 9, the Examiner contends that Hershey disclose a satellite operation center in its master ground station. Applicant respectfully disagrees. The master ground station is not defined as transmitting control and other signals to the other ground stations, but as transmitting control data to the satellite. A typographical error in claim 9 has been corrected and the claim now correctly recites: "the satellite operation center being arranged to transmit the control data to the satellite." Claim 9, as now amended, is believed to be allowable with claim 1, from which it depends.

As to claim 14, the Examiner advances essentially the same arguments that were presented in the rejection of claim 1. Claim 14 has been amended to include recitation of the wide band terrestrial network for use in the steps of transmitting the first and second data to a terrestrial processing center. Claim 14 is believed to be allowable over Hershey for basically the same reasons that were discussed in addressing the rejection of claim 1.

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Claims 16-18 are believed to be allowable for the same reasons as were discussed in addressing the rejection of claims 3-5, respectively. Claims 16-18 are also believed to be allowable as dependent claims of claim 13.

Rejections under 35 U.S.C. §103:

In paragraph 5 of the action, claims 2 and 15 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hershey in view of Nakagawa (US Pat. No. 5,455,961). Nakagawa is relied on for its disclosure of an onboard memory. Applicant concedes that the inclusion of a memory on a satellite is not, in itself, novel. Communication satellites are often configured to operate in a "store and forward" manner, which requires the presence of an onboard memory. Nakagawa discloses a system that uses Doppler shift to increase the effective number of frequency channels that a communications satellite would have available. The patent describes a potential application of this type of system to collect data from one part of the earth, storing the data aboard the satellite, and then downlinking the stored data to another part of the earth. In the present invention, an onboard memory is used to reduce the overall latency or delay from data collection to delivery to the processing center, and to improve reliability of data delivery by providing multiple opportunities for data delivery. The only commonality between the Nakagawa system and the present invention is that both make use of an onboard memory. Claims 2 and 15 have been amended to further clarify the distinction over Nakagawa. These claims are also believed to be allowable with the respective claims from which they depend.

In paragraph 6 of the action, claims 13 and 24 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hershey in view of Olds et al. (U.S. Pat. No.

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6,691,274). It appears from the rejection that Olds is relied on solely for its mention of optical communications in the last paragraph of the specification. Olds is directed to a method for error correction in a communication system, and nothing else in its disclosure appears to be relevant to the present invention. Applicant concedes, of course, that communication by optical means is well known. Claims 13 and 24 are, however, believed to be allowable with the claims from which they depend.

In paragraph 7 of the action, claims 25 and 31 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Nakagawa in view of Butler. (US Pat. No. 6,643,788). The Examiner first contends that Nakagawa teaches a plurality of unmanned receptor terminals and a processing and control center for processing data collected by the satellite, but then concedes that Nakagawa fails to explicitly disclose a receive-only receptor terminal and a wide band network connecting the receptor terminals and the processing and control center. In fact, Nakagawa discloses a plurality of ground stations (transceivers) but does not disclose a processing and control center or a wide band network connecting multiple receptor terminals.

Butler is cited in an effort to show a wide band network connecting a plurality of receptor terminals. Specifically, the Examiner refers to three areas of text: column 1, lines 60-65, column 2, lines 9-13, and column 3, lines 1-27. The first cited text area, column 1, lines 60-65, generally describes a receiver interface circuit having a buffer memory through which data are transferred into a processing computer. The relevance of this citation is not fully appreciated and the text cited at column 2, lines 9-13 does not clarify the relevance of Butler because it simply refers to further details of frame synchronization, bit stream synchronization, and transfer into a memory buffer of a

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downstream computer. The third section of cited text, in column 3, refers to the details of two receiver interfaces (14 and 16) in FIG. 2. Inspection of FIGS. 1 and 2 quickly reveals that they show how a receive data stream is coupled to a downstream computer through a memory interface. Butler does not disclose or suggest, either alone or in combination with Nakagawa, a plurality of receptor terminals, a processing and control center, or a wide band network connecting the receptor terminals to the processing and control center. Nor is there any hint, in the cited references, of a need to provide near global coverage of the earth with a plurality of receptor terminals.

In brief, Nakagawa is directed to a store and forwarding communication system in which the inventive features have to do with using the Doppler effect to subdivide uplink channels into sub-channels, and Butler focuses entirely on details of a receiver-computer interface structure. Accordingly, it is perhaps not surprising that the two references taken together are in no way suggestive of a data collection and distribution system and method in which at least one data collecting satellite broadcasts collected data on a substantially continuous basis to a plurality of receptor terminals located about the globe and coupled to a processing and control center through a wide band network.

The Examiner contends that "it would have been obvious... to modify Nakagawa to include a receive only ground station which transfers the received data from a satellite into a memory buffer via wideband network for the purpose of processing a bit stream in real time wherein the source is remotely located (i.e., satellite)." Applicant respectfully disagrees, for the reasons outline above. Butler simply does not teach what the Examiner contends it teaches in the statement quoted in the previous sentence of

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this paragraph. Butler does not suggest a plurality of receptor terminals located about the globe and coupled to a processing and control center through a wide band network, and Nakagawa discloses a store and forwarding satellite communication system, but nothing more that is relevant to the present invention. Reconsideration and withdrawal of the rejection of claims 25 and 31 are, therefore, respectfully requested.

In section 8 of the action, claims 6, 7 and 19 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hershey in view of Bhat (US Pat. No. 6,438,374). The Examiner concedes that Hershey fails to explicitly disclose that the satellite transmits the first data and the second data to the second receptor in the event the first receptor terminal is unprepared to receive the first data. Bhat is cited to correct this deficiency, but Bhat pertains in part to switching application processors (APs) in a cellular communication network when one AP is found to be non-operational. Therefore, Bhat broadly discloses a use of the principle of redundancy in describing a technique for working around a situation when one computer is non-operational. In the present invention, an alternate receptor may receive data instead of a first receptor when the first receptor is unprepared to do so. The only commonality the invention has with Bhat is that, in a very general sense, both use the principle of redundancy. However, Bhat viewed without the present invention in mind is in no way suggestive of the present invention's use of multiple receptors to provide multiple opportunities to distribute data collected by a satellite. Apparently, the Examiner is equating the receptors of the present invention with the APs of Bhat. Applicant believes that the argument is tenuous at best and believes, in any event, that these claims should be allowable with their respective parent claims.

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In section 9 of the action, claims 10, 11, 20 and 21 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hershey in view of Vanden Heauvel (US Pat. No. 5,924,014). Vanden Heauvel teaches in FIG. 3 and its description in column 8 that uplink signals may be rerouted over terrestrial connections if an uplink reroute condition is detected. Similarly, FIG. 4 teaches a rerouting procedure to accommodate a downlink problem. The only commonality between Vanden Heauvel and the present invention is that both generally involve message rerouting. However, the combination of Vanden Heauvel and Hershey still fail to suggest the present invention because, as explained above, Hershel does not anticipate or render obvious the subject matter of the parent claims from which these rejected claims depend.

In section 10 of the action, claims 26-30 and 32-38 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Nakagawa. Applicant notes that the parent claims (25 and 31) were rejected over Nakagawa and Butler in combination, and wonders whether the Examiner intended to cite Butler in these rejections as well. The Examiner concedes that Nakagawa fails to explicitly disclose means for storing a copy of a global coverage map maintained by the processing and control center, but goes on to assert that the claimed features pertaining to a global coverage map are "notoriously well known in the art of satellite and terrestrial based wireless communication." The Examiner concludes that it would have been obvious to include these features in the system of Nakagawa. Applicant respectfully disagrees with this assertion and respectfully traverses the rejections.

First, as addressed above in responding to the rejection of claims 25 and 31, neither Nakagawa nor a combination of Nakagawa and Butler, is believed to render the

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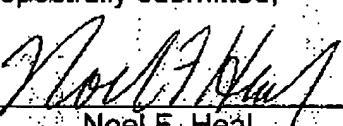
invention of those claims obvious. Second, as to the Official Notice taken by the Examiner with regard to the global coverage map features, Applicant respectfully suggests that, in the absence of specific prior art, the additionally recited features of these claims should render the claims patentable. Reconsideration is respectfully requested.

In section 11 of the action, claims 12 and 22 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hershey. In this rejection, the Examiner takes Official Notice that more than one satellite communicating with a plurality of ground stations is notoriously well known. Applicant respectfully traverses the rejection because (a) respective parent claims 1 and 14 as amended, and as discussed above, are believed to be allowable over Hershey, and (b) in the absence of specific prior art, the additionally recited feature of claims 12 and 22 should also render these claims patentable.

In view of the foregoing, Applicant respectfully requests reconsideration, reexamination, and a formal indication of the allowability of the remaining claims 1-22 and 24-38.

Respectfully submitted,

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